NEW Lighter, Easy-swinging Golf Clubs provide More Power upon impact

SCIENTIFICALLY ENGINEERED ALUMINUM

Lighter than any known golf shaft! Club weight is now concentrated *way down low* . . . in the head. Permits the use of a heavier swing weight than with comparable golf clubs . . . increasing club head speed and making the natural golf swing produce more power upon impact . . . with better shot control, too.

NEW GARY PLAYER BLACK KNIGHT II

Shakespeare – now pioneering new golf products – adds something new for 1968. Gary Player Black Knight II – with the golfing industry's latest sensation, the new super-light, aluminum shaft. Shakespeare blends all the potency of this new step-down tailored aluminum shaft with weight-distributed heads, designed to make the most of this new super-light metal; irons are forged of carbon steel with weight concentrated down low in the head, *behind* the impact zone; woods are of laminated maple, solidly built with inset widened fiber 'sweet spot'; specially swing-weighted with the super light shaft to assure maximum speed impact and power. All the famed little 'touches' that make for refinement: Sand blasted face; lustrous chrome finish; 2-color engraving; gold filled, Fawick rubber grips, preferred by pros. Available in (A) regular or (C) stiff shaft flex. Right hand only.

BLACK KNIGHT II WOODS

No. 1GPAW 1-2-3-4-5 Individual woods		
	List Price – $30.00	Your Cost – **$ 18.90**
No. 3GPAW Full set of woods (1-2-3)		
	List Price – $90.00	Your Cost – **$ 57.00**
No. 4GPAW Full set of woods (1-2-3-4)		
	List Price – $120.00	Your Cost – **$ 75.75**

BLACK KNIGHT II IRONS

No. 1GPAI 2-3-4-5-6-7-8-9 Individual Irons		
	List Price – $20.00	Your Cost – **$ 12.95**
No. 8GPAI Full set of irons (2-9)		
	List Price – $160.00	Your Cost – **$102.95**
No. 9GPAI Full set of irons (2-9 & P.W.)		
	List Price – $180.00	Your Cost – **$115.75**
No. PW-GPAI Black Knight II Pitching Wedge		
	List Price – $20.00	Your Cost – **$ 12.95**
No. SW-GPAI Black Knight II Sand Wedge		
	List Price – $20.00	Your Cost – **$ 12.95**

NOTE – All Black Knight II sets are swing weighted (D3 to D4 on regular flex; D4 to D5 on stiff shaft flex), registered and warranted. Right hand only. Rubber grips only.

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Aluminum: Less Weight And Torque Keys To New Boom In Golf Club Manufacturing

• **One** golf professional said he was driving the ball 15 to 20 yards farther but didn't know why. Another said he was driving it 15 to 20 yards shorter but didn't know why. Both wanted an answer.

The scene was the Jack Tar Poinsett Hotel in Greenville, S.C.; the occasion was the Carolinas PGA education seminar; the subject was aluminum.

Not since steel replaced hickory shafts has there been such a revolution in golf equipment than that caused by sudden popularity of aluminum, and there were many in the audience attending the seminar primarily for this session.

At the rostrum was George Manning of True Temper Corporation, largest manufacturer of golf club shafts, and he became the target of a bombardment of questions. "Why can you hit it farther; why can you hit it straighter; why is it better than steel?"

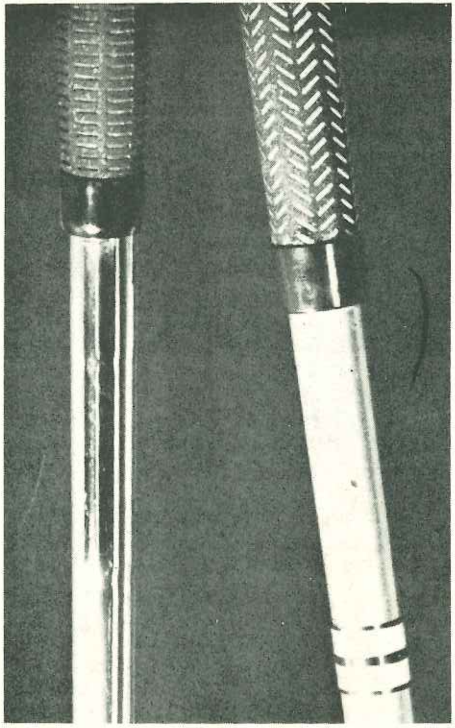
Such are the questions being asked throughout the golfing world, as players speed headlong into what could soon become the Aluminum Age in Golf. Though still met in many areas with apprehension and wait-and-see feelings, aluminum is certain to create a boom within the industry.

"A lighter shaft is a better shaft," says True Temper's Manning. And therein lies the key to its advantages. The difference in weight of the shaft being used is ½ to ⅝ of one ounce less than steel, and that difference opens a multitude of experimental avenues for manufacturers.

"We were limited in what we could do with the steel shaft," said Jim Long, vice president of product design for A.G. Spalding & Bros. "We know aluminum is lighter than steel, but it may have other characteristics which are superior to steel."

One superiority could be its resistance to vibration. Steel can be compared to a tuning fork, whereas aluminum is like lead. It has an ability to dampen out shock. And what does this mean to the golfer? It means less torque (twisting of the shaft) which in turn means a club face which will stay squarer in the hitting area and at impact and consequently produce greater accuracy.

While the shafts were produced to have the same characteristics of steel —torsion, flex, strength and durability —tests conducted by Spalding have proven the aluminum has less torsion than steel. One reason is the aforementioned shock resistance; the other is shaft size.



WHAT IT'S ALL ABOUT
. . . 'fatter' aluminum, right

To obtain the same characteristics of steel, it was necessary to increase the diameter of the shafts by 5 to 15 per cent and increase the inside wall by 50 per cent. This fatter, thicker shaft, though still lighter, promotes less torque.

Players who have tested the new shafts will attest to the fact that missed hits go farther and straighter, and Spalding tests on machines are verifying the statements, though results are not conclusive as yet.

It has been proven, however, that golf balls hit with aluminum-shafted clubs will go farther. In machine tests, identical head weights were used on both steel and aluminum and the machine set at the same velocity. Distance was about the same. But, by adding weight to the head and still keeping the club lighter overall, the distance was increased.

Thus, with aluminum shafts, you have lighter clubs at the same swingweight, better control because of less torsion, and greater distance.

Such advantages immediately appeal to the golfing public, and demand for the clubs has been reported to be as high as 5 to 1 over steel in some areas. Spalding, Wilson and Arnold Palmer Golf Co., have begun full scale production and anticipate most of its 1968 sales to be aluminum.

But other manufacturers are going more cautiously. "There's a place for aluminum," says Paul MacDonald of Dunlop, "but at present it doesn't appear superior to steel." And Lew Oehmig of First Flight states, "People don't have enough experience with it to tell now."

Chet H. Condon, sales manager for Northwestern Golf Co., Chicago, world's largest exclusive manufacturer of golf equipment, revealed "we are shipping 90 per cent aluminum to pro shops, and stepping up the retail percentage as well." The company manufactures around 2,000,000 clubs per year for such outlets as J.C. Penney and Ward's, as well as pro shops, and with such volume can be counted as a bellwether in industry trends.

LeFeill is supplying shafts to three foreign countries and True Temper will enter the foreign market in '69.

Where did it all begin? Though it may come as some surprise to the golfer who today can walk into virtually any pro shop in the country and promptly put his hands on an aluminum-shafted club, the development of this new shaft did not come overnight. Research was being done as long as 20 years ago, and Axaline Co., of California made a few sets in the late 1950s.

But it was not until an alloy (No. 7178) was developed for aerospace tubing that wholesale interest was rekindled among the leading shaft manufacturers—True Temper and LeFiell Co. Since aluminum stiffness is about one-third that of steel, an increase in shaft diameter and wall thickness was necessary to acquire characteristics which would match steel.

An even lighter weight could have been produced, but a half-ounce was decided upon so as not to alter club feel. In this same vein, club heads are about 1 per cent heavier, and additional weight is put in the grips.

With all its advantages, aluminum still needed public exposure and this was provided by Arnold Palmer. At the urging of LeFiell's Dan Sheehan, Palmer used the clubs in the Los Angeles Open in 1967, won the event, and the boom had begun.

Skeptics may point out the fact that only a handful of players on the tour are using the new clubs, but manufacturers claim it is only because the demand for stiff and regular shafts for the general consumer has prevented production of extra stiff shafts which pros require.

Whether or not the new shaft replaces steel, only time will tell. But at worst it is a step in the right direction. "It isn't the ultimate shaft," says True Temper's Manning, "but I don't know that there is an ultimate. We're still looking for it."

—Ron Coffman